IMPROVING CENTRAL LINE-ASSOCIATED BLOODSTREAM INFECTION RATES AT A TERTIARY CARE CENTER THROUGH A MULTIDISCIPLINARY TEAM

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Background
Central line associated blood stream infections are a common cause of morbidity in hospitalized patients. The underlying pathogenesis of CLABSIs is multifactorial. The causes of individual infections are difficult to ascertain, but there are evidence-based practices that are known to decrease the rate of infection. Our hospital saw CLABSI rates increase from 0.82 per 1,000 central line(CL)-days in 2014 to 0.96CL-days in 2015 and sought to implement evidence based practices to reverse the data trend and target institutional goals.

Objectives
Our objective was to assess the incidence density ratio and the standard infection ratio (SIR) of CLABSI before and after intervention.

Methods
A quality improvement project was conducted (2016-2017) at our tertiary-level adult hospital to decrease CLABSI rates. The authors implemented a multidisciplinary team including a physician, a nurse champion, directors of infection prevention, several infection preventionists and unit nurses. This team was sponsored by the chief medical officer. The team performed a gap analysis between practices and best evidence. The team had two monthly meetings: one for CLABSI case review which included the focused multidisciplinary team, and one for communicating findings and discussing progress with unit mangers and administration. The progress was also communicated at the hospitalist and ICU meetings. The team focused on addressing proper techniques for central line insertion including checklist use, early central line discontinuation, avoidance of femoral lines, using aseptic technique, and maintenance through dressing changes. Nursing education served as a major component of quality improvement through annual skills training that focused on proper central line maintenance.

Results
The Centers for Disease Control/ National Healthcare Safety Network (CDC/NHSN) definitions were used to measure CLABSI rates during the following periods: baseline (January 2014 to December 2015) and intervention (January 2016 to December 2017). We observed a significant reduction of the incidence density (incidence rate ratio [95% confidence interval]: 0.73 [0.557, 0.9617] $p<0.02$) from baseline to intervention. The incidence densities (n/1000 CL-days) for baseline and intervention were 0.892/1000 and 0.654/1000 hospital-wide, 1.15/1000 and 0.889/1000 in the ICUs, and 0.707/1000 and 0.493/1000 in non-ICUs. The CLABSI SIR decreased by 67% (p=0.02) house-wide, 92% (p=0.71) in ICUs, and 58% in non-ICU (p=0.03) by November of 2017.

Discussion
The multidisciplinary team approach may be an effective way to implement focused interventions to impact the rate of CLABSI in a tertiary hospital.